

NEW NAMES AND TAXA IN THE SOLANACEAE¹

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ABSTRACT

Nicotiana cutleri D'Arcy, belonging to subgen. *Rustica*, sect. *Paniculatae*, *Witheringia exiguiflora* D'Arcy, and *W. morii* D'Arcy are newly described. Two new transfers are made: *Jaltoma viscosa* (Schrad.) D'Arcy & Davis from *Saracha*, and *Lycianthes sanctaeclarae* (Greenman) D'Arcy from *Solanum*. *Solanum stramonifolium* is newly recorded for Panama.

Jaltomata viscosa (Schrad.) D'Arcy & Davis³, comb. nov.

Saracha viscosa Schrad., Ind. Sem. Götting. 1832: 5. 1832, non Link ex D. Don, 1838. TYPE: Cult., Hort. Goettingen, *Schrader* (MO), seed received by Schrader from Spangenberg from Mexico.

Athenaea viscosa (Schrad.) Fernald, Proc. Amer. Acad. Arts 35: 567. 1900.

A. macrocardia Standley & Steyermark, Publ. Field Mus. Nat. Hist., Bot. Ser. 22: 375. 1940. TYPE: Guatemala, below Finca Alejandria, Sierra de las Minas, Zacapa, *Steyermark 30004* (F, not seen, see Gentry & Standley, Fieldiana, Bot. 24 (10, 1 & 2): 7. 1974.

Herbs to 1 m tall, branching, the stems subterete, in part mottled purplish; viscosa, pilose, the hairs erect, to 2 mm long, gland-tipped, dendritic, the branching distal on the hair, the gland golden, glistening, each gland secreting a golden globule of sticky fluid. *Leaves* geminate ovate, textilous, viscid, concolorous, entire or with 1-3 short deltoid-acuminate lobes, apically acuminate, basally truncate, the auricles crinkled, the veins 4-5 on each side, the basal 5 subdigitate, not anastomosing to form a distinct marginal vein, the minor venation somewhat impressed above, elevated beneath, pilose and conspicuous, evenly pubescent above with erect, mainly simple, gland-tipped hairs, beneath with shorter hairs except on the veins; petiole subterete but flattened on top, viscid-pilose, to 10 cm long, ca. 3 mm across basally, narrowing somewhat upwards. *Inflorescences* fasciculate in the axils of a pair of unequal leaves, to 10-flowered; pedicels terete, pilose, to 4 cm long, slender, expanded slightly near the apex, often recurved downwards. *Flowers* not showy, not fragrant; calyx 5-lobed about halfway down, the cup strongly angled, the angles rounded, saccate, ca. 1.5 cm across, slightly recessed at the point of pedicel insertion, viscid-pilose with simple hairs, the lobes unequal, cuneate, 1.5 cm long, pilose outside, inside with reduced, glandular hairs, slightly accrescent and turning red in fruit; corolla recurved-rotate, ca. 4 cm across, lobed halfway down, with 5 deltoid lobes, white with dark green mottling near the base of each lobe and proximal to it, drying bright yellow, the throat tomentose with white, eglandular, dendritic hairs, the ventral surface glabrous, the margins ciliate with white, mostly eglandular, submoniliform hairs, dorsally glabrous; stamens inserted near the top of the corolla tube, glabrous except for a few hairs near the base, white, slightly geniculate, ca. 10 mm long, somewhat unequal, the anthers ellipsoidal, purple, ca. 4 mm long, turning blue

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following anthesis; ovary ellipsoidal, glabrous, 4 mm tall, not obviously stipitate, the basal angles light orange, merging into the ovary, the style slender, erect, white, 10 mm long, apically clavate, slightly compressed, the stigma green forming a small, curved crest with a faint longitudinal sulcus. *Fruits* bright red berries, loosely enfolded by the reddish, slightly enlarged calyx lobes. Nectar is secreted by the corolla throat in the regions between the filaments. Whether the basal angles of the ovary, which have been termed a nectary in other related groups, actually secrete nectar is not known.

This species has long been cultivated in European botanical gardens. It was described from plants grown in Goettingen from seed received from Mexico from Spangenberg. Somewhat after its 1832 publication by Schrader, Dunal (1852: 433) amplified the collection notes to "in sylvis alpinis Mexici." But no more recent material from Mexico has been seen by the present authors, although no search has been made beyond the Missouri Botanical Garden (MO). The plant was well figured by Sweet (1838: tab. 323), but as no recent figures or descriptions are known, an amplified description is provided here. This description differs from Dunal's in that the anthers are purple, and not really yellow, although the copious pollen gives dehiscent anthers a yellowish cast. The filaments are actually subequal, with two opposing ones longer than the other three.

The name *Saracha* Ruiz & Pavon has been used in a mistaken sense until quite recently when Gentry (1973) pointed out that this name should be restricted to a group of South American trees and that the herbaceous plants hitherto known as *Saracha* should be referred to *Jaltomata* Schlecht. (1838). The plant at hand is clearly not congeneric with the South American plants properly called *Saracha*, but there is some question as to its correct placement. Quite similar to *Jaltomata procumbens* (Cav.) J. L. Gentry, the type species of *Jaltomata*, this species differs most importantly in its fasciculate rather than pedunculate inflorescence and in having narrow, nonflexing calyx lobes and saccate calyx angles. The two species, *J. procumbens* and *J. viscosa*, have similar anthers: there is a large connective visible on the dorsal side and a deep groove on the ventral side. A similar plant is *Physalis stapelioides* (Regel) Bitt. which has similar pubescence, leaf shape, solitary flowers, and large corollas. The calyx teeth are of the same shape as in *J. viscosa* but the calyx is not deeply lobed and does not turn red. *Physalis stapelioides*, which was first described under *Saracha*, appears to be a well-accommodated member of the genus *Physalis*, while *Saracha viscosa* has its closest affinities with *Jaltomata procumbens*. Menzel (1950) indicated that on cytological evidence, *Jaltomata procumbens* and *J. viscosa* are more like one another than they are to any of the several species of *Physalis* she examined.

***Lycianthes sanctaeclarae* (Greenman) D'Arcy, comb. nov.**

Solanum sanctaeclarae Greenman, Bot. Gaz. (Crawfordsville) 27: 211. 1904. TYPE: Costa Rica, *Donnell Smith 6783* (F).

This species is distinctive in its globose, truncate, accrescent calyx which is vestite with brown, stellate hairs. It has recently been collected in Panama: El Llano-Cartí Road, 23.4 km from Interamerican Highway in wet forest, *Mori*

↳ *Kallunki 5581* (MO). The collectors note that this is an epiphytic shrub with purple petals. It was in bloom and young fruit in mid April, 1975.

***Nicotiana cutleri* D'Arcy, sp. nov.**

Herba granda, ramis puberulentibus, foliis glabratibus, corollis rectis, parvis, glabratibus, calycibus tomentulosis.

Herbs 40–60 cm tall; stems terete with 1–2 shallow furrows, tomentulose with short-stalked glandular and eglandular trichomes. *Leaves* chartaceous, cordate, to 15 cm long, 8 cm wide, apically obtuse, basally cordate on the lower leaves, obtuse on those in the inflorescence, the margin subentire to repand, the veins ca. 6 on each side, the blade glabrate to minutely puberulent, the veins puberulent; petiole unwinged, to 4–5 cm long, pubescent. *Inflorescences* narrow, thrysiform, many flowered; peduncle stout, becoming slender and angled apically, 20–40 cm long, the basal branches subtended by reduced leaves, the apical branches ebracteate or with pubescent, narrow leaves; pedicels to 5 mm long, tomentulose. *Flowers* with the calyx 6 mm long, tubular-campanulate with 5 narrowly deltoid teeth, outside evenly tomentulose overall, minutely puberulent inside; corolla urceolate-tubular, 17 mm long, 6 mm wide, straight, the throat cylindrical to ellipsoidal, strongly contracted apically and basally, the limb with 5 sinuate lobes ca. 2 mm long, glabrous outside except for a few hairs at the apex, glabrous inside; stamens included, 5, inserted ca. 3 mm above the base of the corolla tube, the anthers clustered just below the corolla mouth, 3 mm long, ovate, the filaments ca. 12 mm long, the basal 4–5 mm thickened and long pilose, the apical $\frac{2}{3}$ glabrous, slender; ovary narrowly ovate, ca. 3 mm long, the style cylindrical, the apical 6 mm puberulent, glabrous below, the style compressed, slightly 2-lobed. *Fruits* not seen.

TYPE: BOLIVIA. DEPT. TARIJA: Between Las Carreras and Escayachi, 200 m, clayish soil on river bank, flower yellow greenish, *Cardenas 4948* (MO, holotype; BIRM, isotype).

This species is a member of subgen. *Rustica*, sect. *Paniculatae* Goodsp. It is similar to *N. paniculata* L., but has less pubescent leaves, much smaller flowers, and no expansion of the corolla limb in the region of the anthers. It is also well outside the distributional range of *N. paniculata* which Goodspeed (1954) recorded as endemic to Peru. *Nicotiana cutleri* is also reminiscent of *N. knightiana* Goodsp., another Peruvian endemic, which has a conspicuously pubescent corolla, and of *Nicotiana benavidesii* Goodsp. which has exserted stamens.

This species is named for Dr. Hugh Cutler, Missouri Botanical Garden, who transmitted the type specimen from M. Cardenas, collector of the type.

***Solanum stramoniifolium* Jacq., Misc. Aust. 2: 298: 1781; Ic. Pl. Rar. 1: 44. 1782. TYPE: *Jacquin* (W).**

This species is common in disturbed vegetation in the lowlands of northern South America but has hitherto not been recorded from Panama. Mr. Michael Nee, University of Wisconsin, and important contributor to collection of the

Panamanian flora, was the first to locate this plant on the lowland, coastal strip of Bocas del Toro Province.

Solanum stramoniifolium is a member of sect. *Lasicarpum*. The leaves closely resemble those of *Solanum hirtum* Vahl, with which this species has been confused in the past, and it has similar acicular spines. The calyx of this species, however, is short and the five lobes are truncate with short sinuses. In living material, secretions from the five nectaries stand out as conspicuous clear beads. In the recent treatment of the Solanaceae in the *Flora of Panama* (D'Arcy, 1973) this species would key out on p. 691 under "d" along with *S. hirtum*. The structure of the calyx lobes is the best distinction here, as *S. hirtum* has large, subfoliaceous, deltoid calyx lobes. The pubescence of *S. stramoniifolium* is much finer and there is more tendency for spines on lower parts of the stem to recurve.

Witheringia exigiflora D'Arcy, sp. nov.—FIG. 1.

Frutex glaber, foliis grandis, obliquis, aniso-geminatis, inflorescentibus fasciculatis, floribus parvis, corollis intus glabris, antherae nunc apiculatis nunc calvis, calyce accrescenti, acinum involventi.

Glabrous *shrubs* to 3 m tall; twigs stout, drying wrinkled. *Leaves* prominently aniso-geminate; major leaves elliptical, oblique, to 40 cm long, 15 cm wide, apically acute or acuminate, basally rounded, obtuse or sometimes somewhat dimidiate, the veins 14–18 on each side of the midvein, on the broader side parallel, on the smaller side arcuate, the petiole to 17 mm long; minor leaves rotund, to 5 cm long, veins 4–5 on each side, the petioles mostly less than 1.5 mm long. *Inflorescences* few- to several-flowered fascicles in the leaf axils; pedicels to 5 mm long, glabrous, drying angled. *Flowers* with the buds ellipsoidal, 10–15 mm long, 5 mm across; calyx lobes free or fused, the calyx tubular, apically truncate or sinuate with 2–5 angles in the upper portion sometimes forming short umbos or subfoliaceous teeth, glabrous or pubescent with simple hairs, the sinuses hyaline, splitting on corolla egress, 3 mm long at anthesis but soon accrescent; corolla pale yellow, campanulate to tubular, to 17 mm long, glabrous or minutely puberulent outside, glabrous within, the sinuses splitting about halfway down to form 5 lobes; stamens 5, inserted 4 mm from the base of the tube, 4 mm below the lowest corolla sinus, the filaments free 4 mm, glabrous or with a few hairs just above the point of insertion, the anthers oblong, 3.5 mm long, basifixed and basally auriculate, apiculate or not, included, only partly exceeding the corolla sinuses; ovary narrowly pyramidal with rounded angles, apically truncate, ca. 3 mm tall, 1.3 mm broad, the nectary 0.6 mm tall but inconspicuous and merging with the contours of the ovary, the style uniformly cylindrical, glabrous, the stigma capitate, small, faintly 2-lobed, not exceeding the anthers. *Berry* enclosed by the accrescent calyx which is narrowly pyriform or elliptical, ca. 15 mm long, apically exceeding the berry and the lobes free; seeds dark, discoid, muricate, ca. 2 mm in diameter.

TYPE: PANAMA. PANAMA: 16 km N of Panamerican Highway on the Llano-Cartí Road, premontane wet forest, 400–450 m, *Nee & Dressler 9340* (MO, holotype).

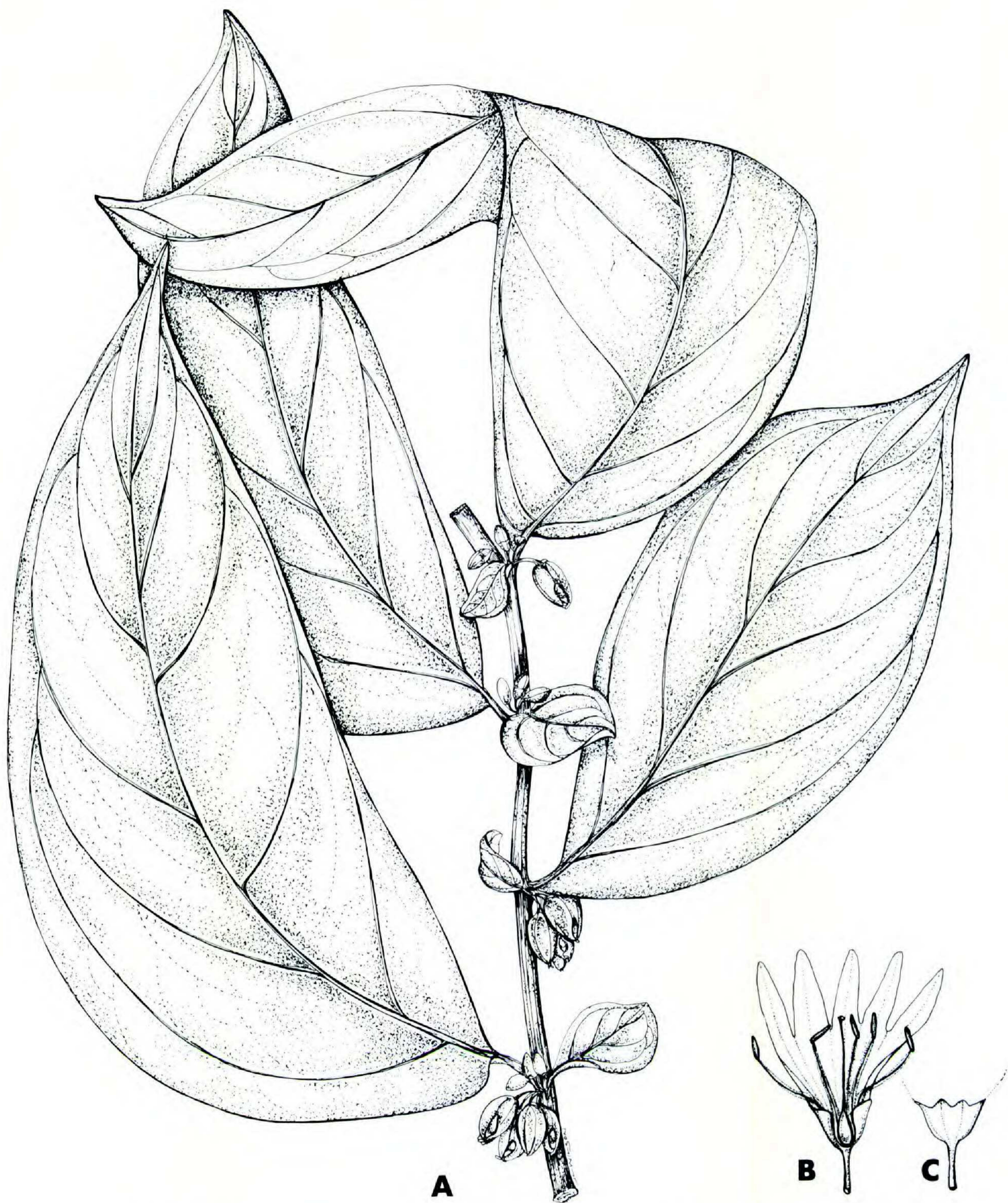


FIGURE 1. *Witheringia exiguiflora* D'Arcy.—A. Habit with fruits in fascicles at the nodes ($\times \frac{1}{2}$).—B. Opened flower showing gynoecium and androecium ($\times 2$).—C. Calyx ($\times 2$). [After Dressler 4582 (MO).]

Additional collections examined: COSTA RICA. CARTAGO: Río Chitaria crossing of Highway 10, 5 km E of Turrialba, 850 m, *Haber RC-1* (MO). LIMÓN: Valle of Río Sapo, 7 km S of Siquirres, Valle Escondido, 750 m, *Haber VE-4, VE-8* (both MO).

PANAMA. DARIÉN: Near upper gold mining camp of Tyler Kittredge on headwaters of Río Tuquesa, ca. 2 air km from Continental Divide, *Croat 27244* (MO). Cerro Campamento, S of Cerro Pirré, *Duke 15653* (MO). Top of Cerro Mali, 1300–1420 m, *Gentry & Mori 13639* (MO). Caná-Cuasí Trail, Chepigana District, 200 ft, *Terry & Terry 1611* (A). PANAMÁ: 20–21 km N of El Llano on El Llano-Cartí Highway, *Dressler 4582* (MO). 16 km above Pan-American Highway on road to Cartí, 400 m, *Kennedy 2684* (MO). SAN BLAS: Forest SW of Puerto Obaldía, *Croat 16836* (MO).

Although this species has been collected a number of times, most collections consist mainly of leaf and stem with little in the way of flower or fruit. The large, oblique, aniso-geminate leaves which are sometimes coriaceous, and the stems which appear stout and weak and dry with longitudinal wrinkles are quite unusual in the Panamanian flora. Flowers vary considerably, the calyx in most collections being quite glabrous but in *Dressler 4582*, the young calyx is pubescent and in *Terry & Terry 1611* it is tomentose. Calyx prefloration is complete or valvate-imbricate in different elements of *Nee & Dressler 9340*. In fruit the calyx envelops the berry and the lobes are sometimes slightly expanded beyond it. The fruit is directed downwards and sometimes the flowers are nodding too. In no collection seen is there any evidence of splitting of the fruiting calyx.

The generic affinities of *Witheringia exiguiflora* are by no means clear, although it seems most closely related to *Witheringia riparia* H.B.K. which occurs at upper elevations in Central America and in northern South America. In both of these species the calyx is accrescent; in *W. riparia* it is shorter than the berry and on herbarium sheets is often split lengthwise for at least part of its length. The corolla tube of *W. riparia* is quite pubescent at the point of stamen insertion whereas in *W. exiguiflora* it is glabrous.

Collections of *Witheringia exiguiflora* all come from premontane wet or rain forests, presumably between 300 and 1,500 m elevation. The flora of this ecological confine has been poorly sampled to date, and future collections may indicate a somewhat different regional distribution from that now indicated. Habitat reflecting the temperature and moisture parameters of this ecological regime extends as a narrow strip from Guatemala to Peru and Venezuela, and collections may be expected from any point along this strip, even though present information requires listing the species as endemic to Panama and Costa Rica.

***Witheringia morii* D'Arcy, sp. nov.**

Witheringia morii D'Arcy, spec. nov. Frutex glaber, foliis aniso-geminatis, grandis, inflorescentibus floridis, fasciculatis e axillis foliorum, floribus parvis, corolla extus puberulenti intus sparsim tomentosa, calyce fructiferi leviter accrescenti.

Shrubs to 1 m tall; twigs glabrous, appearing soft, relatively stout, drying wrinkled or smooth. *Leaves* conspicuously aniso-geminate; major leaves elliptic, oblique, to 30 cm long, 10 cm wide, apically acuminate, basally acute with ca. 8 prominent, arcuate veins on each side, glabrous, the petioles ca. 10 mm long, wingless; minor leaves elliptic, oblique, 4–8 cm long, the petioles to 3 mm long. *Inflorescences* many-flowered fascicles in the leaf axils; bracts resembling reduced minor leaves; pedicels 2–5 mm long, glabrous. *Flowers* drying reddish brown, the buds globose; calyx prefloration nearly complete with only a pore present, the calyx glabrous, becoming 5 mm long in flower, splitting at the sutures but apical teeth or basal umbos not produced; corolla campanulate, 15–18 mm long, exerted ca. 10 mm from the calyx, the membranous sutures splitting more than halfway down to form 5 lobes, the lobes apically puberulent outside with degenerate trichomes, inside pubescent in tufts just below the point of stamen insertion; stamens 5, inserted ca. 4 mm from the bottom of the corolla tube, ca. 1.5 mm below the sinuses, the filaments compressed, glabrous, the anthers nar-

rowly hastate, 3 mm long, basifixed, basally 1 mm across, not apiculate, the tips only slightly exceeding the corolla sinuses; stigma subcapitate, the apical portion of the style somewhat expanded, the ovary not examined. *Fruits* not seen.

TYPE: PANAMA. CHIRIQUÍ: Coffee finca of Rattibor Hartman, "Ojo de Agua," 27 km NW of El Hato de Volcán, Santa Clara region, 5000–5300 ft, *Mori & Bolten* 7192 (MO, holotype).

Additional collections examined: COSTA RICA. PUNTARENAS: Premontane rain forest, Finca Las Cruces Field Station 5 km S of San Vito on Highway 16, 1200 m, *Haber SV-15* (MO).

This species is singular in its large, aniso-geminate leaves and in its flowers. The calyx is similar to that of *W. riparia* H.B.K., but the corolla becomes deeply lobed and the anthers are not apiculate.

Although the two known collections are from different countries, the two localities are only some 25 km apart, have similar rainfall and temperature regimes, and do not differ more than 400 m in elevation.

LITERATURE CITED

- D'ARCY, W. G. 1973. Solanaceae. In R. E. Woodson, Jr. & R. W. Schery, *Flora of Panama*. Ann. Missouri Bot. Gard. 60: 573–780.
- DUNAL, M. F. 1852. Solanaceae. In A. P. de Candolle, *Prodromus Systematis Naturalis Regni Vegetabilis*. Vol. 13(1): 1–690.
- GENTRY, J. L., JR. 1973. Restoration of the genus *Jaltoma* (Solanaceae). *Phytologia* 27: 286–288.
- GOODSPEED, T. H. 1954. *The Genus Nicotiana*. Chronica Botanico Co., Waltham, Massachusetts.
- MENZEL, M. Y. 1950. Cytotaxonomic observations on some genera of the Solanae: *Margaranthus*, *Saracha*, and *Quincula*. *Amer. J. Bot.* 37: 25–30.
- SWEET, R. 1838 (1836). *The British Flower Garden*. Ser. 2. Vol. 4. James Ridgway and Sons, London.